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PENSOFT

New record of the Red Shoulder Wrasse, *Stethojulis bandanensis* (Bleeker, 1851) (Perciformes, Labridae), from Korea

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Abstract

A single female juvenile specimen of *Stethojulis bandanensis* (Bleeker, 1851) was collected from Korea. The specimen is characterized by the 14 pectoral fin rays, the orange-red spot on upper pectoral fin base, and two small light-blue-edged black dots on the caudal peduncle. This species is the third species of the genus *Stethojulis* Günther, 1861 in Korea, and the newly proposed Korean name for the species is "Ju-hwang-jeom-mu-ji-gae-nol-lae-gi".

Keywords

Unrecorded, Jeju Island, subtropical, juvenile

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Introduction

The family Labridae (order Perciformes), one of the largest groups of marine fishes, is widely distributed in tropical to temperate waters of the Atlantic, Indian, and Pacific oceans (Hastings et al. 2014). The family contains 68 genera and more than 560 species worldwide (Fricke et al. 2021). In Korea, 14 genera and 21 species have been reported until now (Kim et al. 2005; Bae et al. 2013). Among them, the genus *Stethojulis* Günther, 1861 consists of 10 species in the world (Randall 2000), including two species in Korea (Kim et al. 2005; Bae et al. 2013). The genus is characterized by IX, 10–12 dorsal fin rays, III, 10–12 anal fin rays, 12–16 pectoral fin rays, 25 vertebrae, lateral line continuous by 25–28 scales, and no scales on head (Randall 2000; Kuiter 2010). During a survey of coastal fishes from the eastern coast of Jeju Island, a single specimen of the genus *Stethojulis* was collected which was identified as *Stethojulis bandanensis* (Bleeker, 1851) based on external morphology. This species has not been previously reported in Korea.

Methods

A single specimen of *Stethojulis bandanensis* was collected from waters of the east coast of Jeju Island in October 2020 (Fig. 1), and the whole body was fixed in 99% ethanol. Counts were made according to Hubbs et al. (2004). Measurements were made according to Hubbs et al. (2004) and Randall (2000) using digital Vernier calipers to the nearest 0.1 mm. Fins and vertebrae were counted on a CMB-2 radiograph (Softex, Japan)

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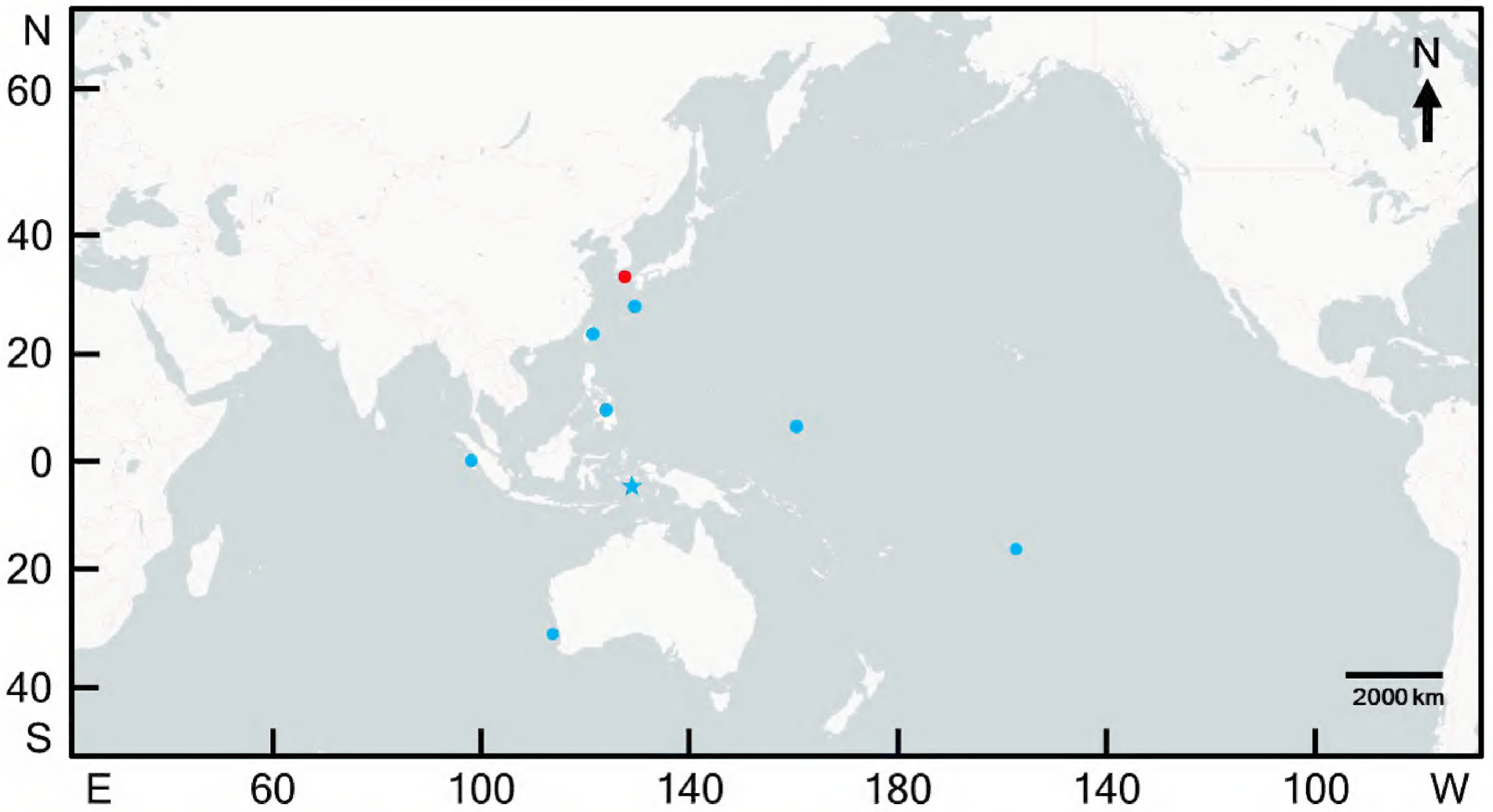

Figure 1. Occurrence site of the present study (red dot), representative previous studies (blue dots), and type locality (blue star) of *Stethojulis bandanensis*.

with a Shad-o-Box 6K HS digital detector (Teledyne Dalsa, Canada). The specimen has been deposited at the National Marine Biodiversity Institute of Korea.

Results

***Stethojulis bandanensis* (Bleeker, 1851)**
Figure 2; Table 1

New record. Korea – Jeju Province • Jeju Island, Seogwi-po, Seongsan-eup; 33°27′37″N, 126°56′05″E; 20.X.2020; Se Hun Myoung leg.; hand net; MFD-1412.

Identification. The specimen was assigned to the genus *Stethojulis* based on the following morphological characters: dorsal fin rays IX, 11; anal fin rays III, 11; 25 vertebrae; and lateral line continuous (Randall 2000). The specimen was identified as juvenile female *S. bandanensis* based on the 14 soft rays of pectoral fin, orange-red spot on above pectoral fin base, and two light-blue-edged blackish dots on caudal peduncle (Randall 2000; Shimada 2013).

Description. Counts are listed in Table 1. Proportions of fresh specimen (as % SL): head length 34.4; body depth 31.5; caudal peduncle depth 12.9; caudal peduncle length 16.8; predorsal length 34.6; prepelvic length 37.0; preanal length 59.0; snout length 13.1; interorbital width 9.5; eye diameter 6.2; upper jaw length 7.3; pectoral fin length 20.2; pelvic fin length 13.8.

Body oval and compressed. Snout slightly pointed, mouth terminal, and lips thick. Posterior tip of maxilla not reaching anterior edge of eye. Interorbital region convex. Posterior margin of preopercle smooth. Both gill

Figure 2. *Stethojulis bandanensis*, MFD-1412, 54.9 mm SL. Arrows indicate blackish spots. Scale bar = 10 mm.

Table 1. Comparison of meristic characters of *Stethojulis bandanensis*.

	Stethojulis bandanensis		
	Present study	**Randall (2000)***	**Allen and Erdmann (2012)**
Number of specimens	1	1628	—
Standard length (mm)	54.9	10–113	—
Dorsal fin	IX, 11	IX, 11	IX, 11
Anal fin	III, 11	III, 11	III, 11
Pectoral fin	14	14–15	14–15
Pelvic fin	I, 5	—	—
Lateral line scales	25	25	25
Vertebrae	25	—	—

*Including lectotype specimen.

membranes attached to isthmus. Dorsal fin base long, origin located at behind of opercle vertically, and continuous spines and soft rays. Caudal peduncle slightly deep, and caudal fin truncate but its posterior margin slightly rounded. Lateral line complete, continuous between anterior and posterior parts.

Coloration: when fresh, upper half of head and body darkish brown with irregular, small, white dots. Lower half of head and body pale reddish brown to whitish ventrally. Small, dark-brown spot on front of snout. Yellowish patch on cheek from in front of snout through opercle. Orange-red spot on above pectoral fin base. Two small light-blue-edged black dots on middle of caudal peduncle region.

Dorsal, anal, and caudal fin yellowish except ventral margin of anal fin. Small blackish spots on posterior membrane of dorsal fin and midbase of caudal fin. Pectoral and pelvic fins semitransparent. After fixation, head and body pale, darkish green dorsally, and light green to whitish ventrally. All fins whitish, and patch on cheek and spot on pectoral fin base faint.

Distribution. *Stethojulis bandanensis* is distributed in the Indo-Pacific region between eastern Indian and middle Pacific Oceans, including Indonesia, the Philippines, Taiwan, southern Japan, Australia, Micronesia, and French Polynesia (Randall 2000; Shen and Wu 2011; Allen and Erdmann 2012; Shimada 2013; Bacchet et al. 2017). Our specimen was collected from the east coast of Jeju Island, Korea, and represents the first record of *S. bandanensis* from Korea.

Ecology. *Stethojulis bandanensis* is sexually dichromatic, and color pattern changes from juvenile to adult (Randall 2000; Allen and Erdmann 2012). This species occurs inshore in water less than 3 m deep, including tidal pools, but it has been reported down to 22 m deep (Randall 2000).

Discussion

The specimen corresponds to the female coloration of *Stethojulis bandanensis*, rather than the male in having a yellowish patch on cheek, small white dots on the dorsal head and body, two light-blue-edged black dots on caudal peduncle, and an orange-red spot on upper pectoral fin base (Allen and Erdmann 2012). Interestingly, it differs from adults by having a small blackish spot on the posterior membrane of the dorsal fin and midbase of the caudal fin, which is a characteristic of the juvenile stage (Randall 2000). Therefore, we confirm that our specimen is a juvenile female *S. bandanensis*, which means that this species may have become established in waters adjacent to Jeju Island. Comparing *S. bandanensis* with the two congeneric species reported from Korea, the species differs from *Stethojulis interrupta terina* Jordan & Snyder, 1902 and *Stethojulis trilineata* (Bloch & Schneider, 1801) by the number of pectoral fin rays (14 or 15 in *S. bandanensis* vs. 12 or 13 in *S. interrupta terina* and *S. trilineata*).

The new Korean name of "주황점무지개놀래기" is proposed for *S. bandanensis*.

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Author's contributions

HJK identified the species and wrote the manuscript; SHM collected a specimen; both the authors read and approved the manuscript.

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